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ADJUSTABLE CARDBOARD DENTAL CHAIR AND STOOL(U) NAVAL  
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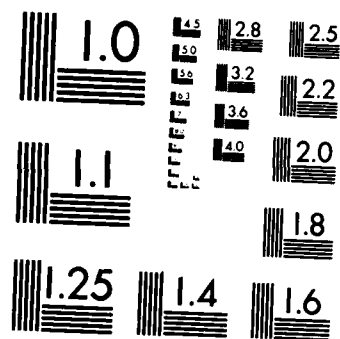
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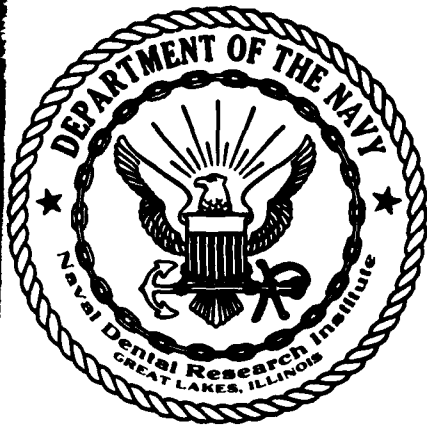
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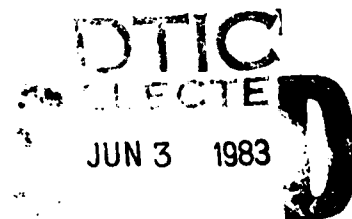


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# ADJUSTABLE CARDBOARD DENTAL CHAIR AND STOOL

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Portability of dental equipment is a priority for those who provide care to the home-bound, nursing homes, hospitals, rural areas and deployed military. A portable dental chair should be easily transportable, suited for its purpose and be cost effective.

A simple lightweight, adjustable, compact chair constructed from corrugated cardboard has been designed at the Naval Dental Research Institute, Great Lakes, Illinois. The double-ply corrugated cardboard sheets are commercially available and the component parts may be cut out with a sharp knife (1). The chair is designated as the mobile oral treatment and examination chair (MOTEC).

#### Component Parts

The MOTEC is designed to support an adult patient with a maximum weight of 300 pounds. It is adjustable from a reclining to an upright position, which is a feature not included in a previous design (2).

A cardboard stool for the dentist is incorporated in the design to provide a seat when treating a reclining patient. For the seated dentist, this new design allows leg room under the patient's head. When the stool is disassembled, its three component parts are utilized as supports for the chair back when placed in the upright position.

Two 7'x10' sheets of double wall corrugated fiber board (cardboard) with a test strength of 500 pounds per square inch are required for fabrication. Eight cardboard parts are prepared for the construction of one patient chair. Five patterns, (Figures 1-5), are used as guides in making these parts. To prevent excessive waste of material, the pattern drawings are strategically layed out on one sheet of cardboard. For sturdy construction, the corrugations must run in the direction indicated by arrows in the pattern diagrams.

Make one of each of the following: (Figure 1) seat-leg rest; (Figure 2) backrest. Make two of each: (Figure 3) vertical leg support; (Figure 4) vertical back support; (Figure 5) cross support. Three different parts are used to construct the stool. Make one of each: (Figures 6-8). Two of these can be laid out on the unused portion of the first 7'x10' sheet, and the third section on the unused portion of a sheet used to make a second chair. The component parts are cut from the cardboard sheet with a sharp utility knife and stored in a cardboard carrying case.

Moisture deterioration of cardboard in damp environments can be a problem, particularly at the cut edges of each part. For these climatic conditions, we suggest the use of masking tape and a water resistant sealant spray around the exposed edges, especially on the lower portions of the chair and stool.

#### Assembly

Because of design simplicity, the chair can be assembled by one person in less than five minutes. Using the assembly diagram as a guide (Figure 9), begin with the two vertical back supports which are bent at the dotted lines as indicated in the pattern. Note that the folds on one vertical

back support are bent away from you and the folds on the second are bent toward you, forming mirror image parts. After placing them side by side, the cross support is inserted into the slots to secure this segment of the chair base.

Similarly, the vertical leg supports are secured with a cross support to form the second segment of the chair base.

The two base segments are then placed together with the slots on the adjoining free ends aligned. After folding at the locations indicated, the backrest and the seat-leg rest are inserted into the base slots, securing the chair in the reclining position.

The stool used for sit-down dentistry, when the patient is in the reclining position, is fabricated from three parts (Figure 10). Individually, these parts form a brace which holds the back support in the upright position when the stool is not needed (Figure 10).

The total weight of the chair and stool in the carrying case is 20 pounds. When disassembled, the parts occupy a space 40"L x 26"H x 6"W. As we have found from experience, transportation of this equipment can be handled by one person and the total package, including the carrying case, will fit into a small car.

#### Summary

A lightweight cardboard chair has been developed for use in portable dental care delivery programs. The design will accommodate an adult patient, is sturdy, and includes a reclining and an upright position. A stool has been added to the design for sit-down dentistry, and when disassembled, the stool component parts are used as supports for the upright backrest.

#### Acknowledgement

The authors are grateful for the assistance of DT3 Timothy Barnes for the drafting of construction plans; HM1 Eric Larson for photographic support; and Myra Rouse for manuscript preparation.

#### References

1. Hennessey, J. and Papanek, V. Nomadic Furniture. New York, Pantheon Books, 1972.
2. Goldstein, C. M. Design of a practical dental chair made of corrugated cardboard. JADA 97(6):996, December 1978.

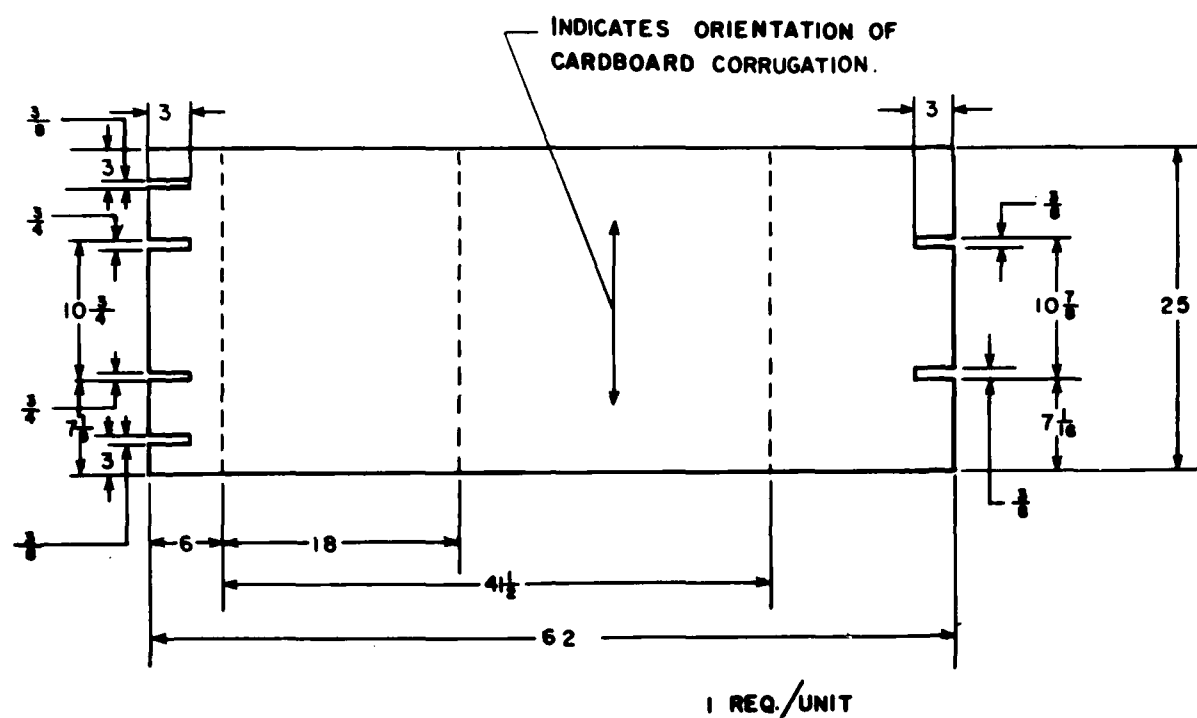


Figure 1. Seat-leg rest.

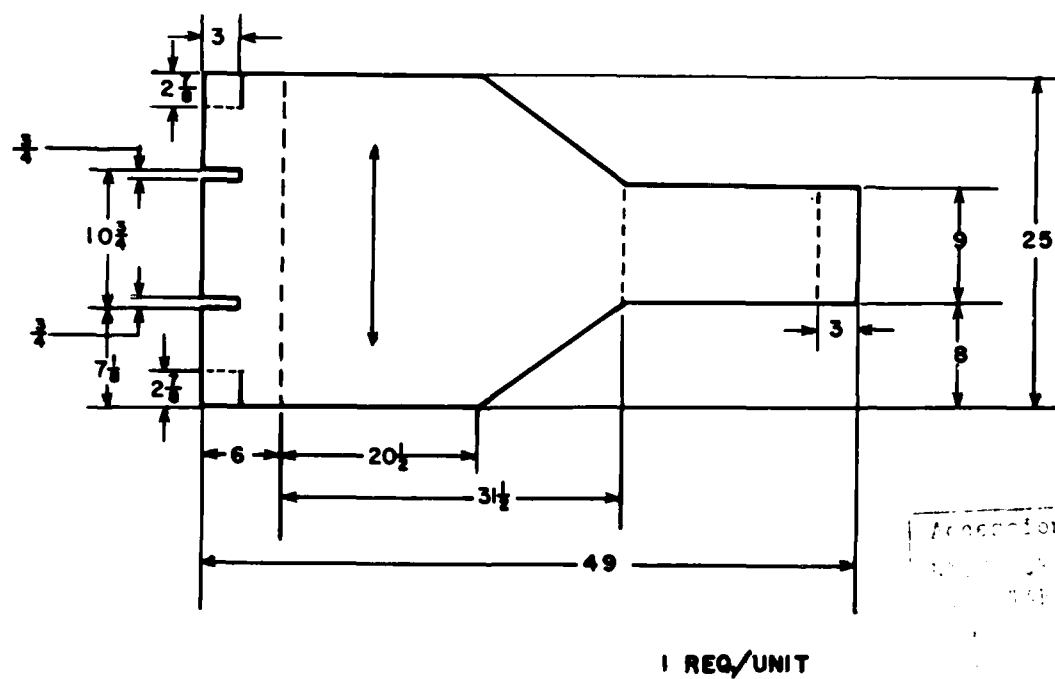


Figure 2. Backrest.



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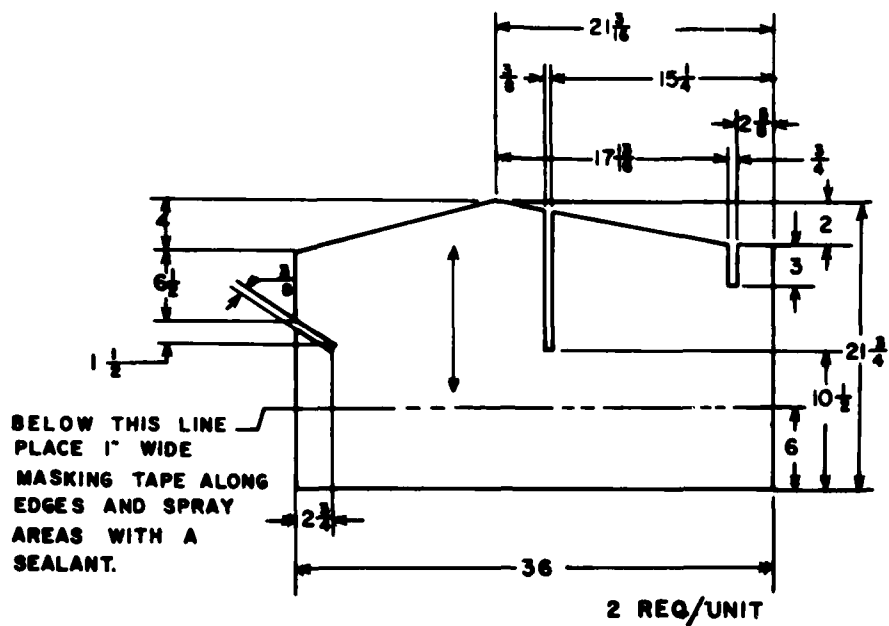


Figure 3. Vertical leg support.

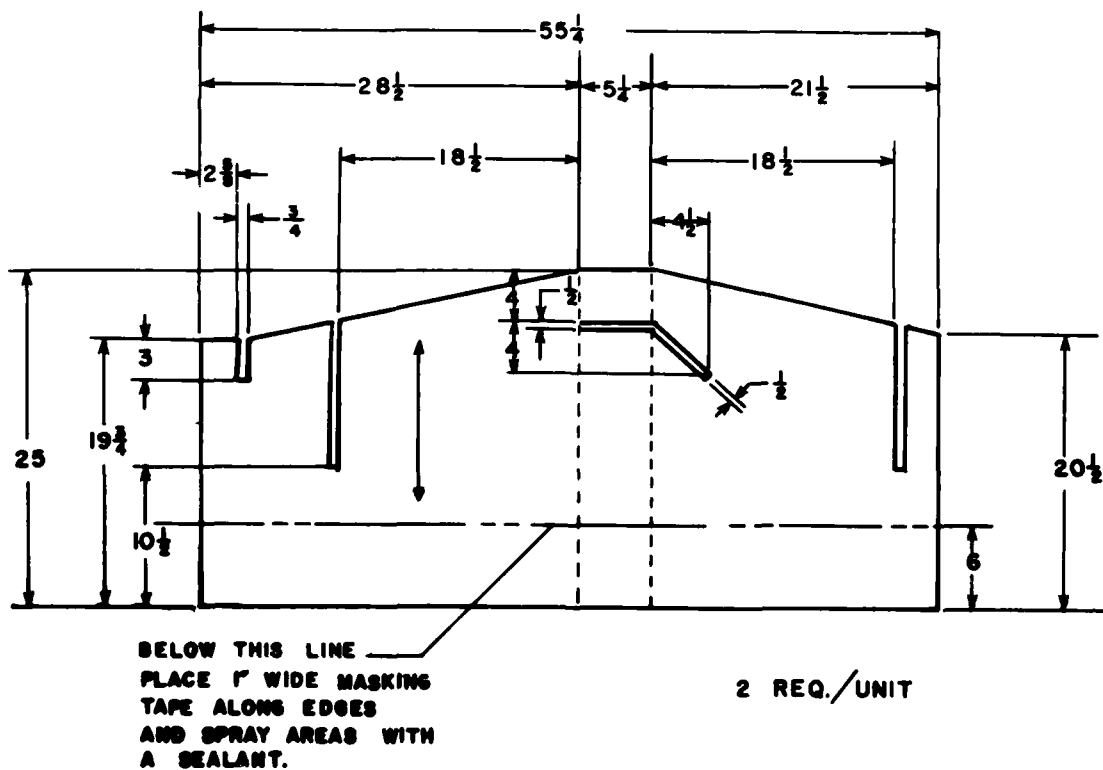


Figure 4. Vertical back support.



FOR ONE UNIT THIS SLOT  
IS NOT REQUIRED.

BELOW THIS LINE  
PLACE 1" WIDE MASKING  
TAPE ALONG EDGES  
AND SPRAY AREAS WITH  
A SEALANT.

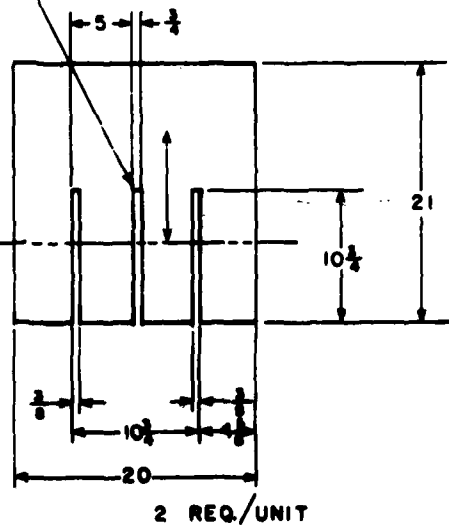


Figure 5. Cross support

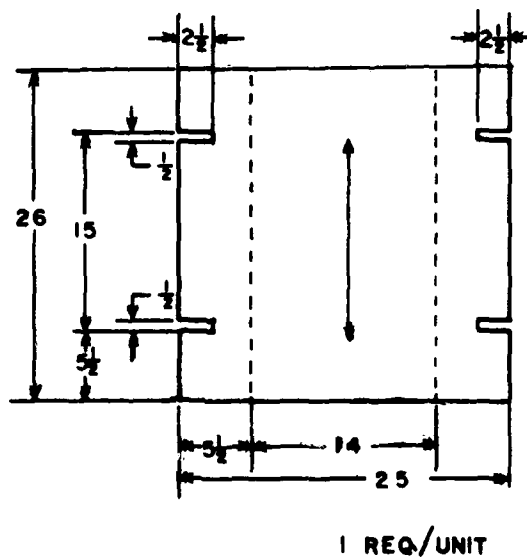


Figure 6. Stool seat.

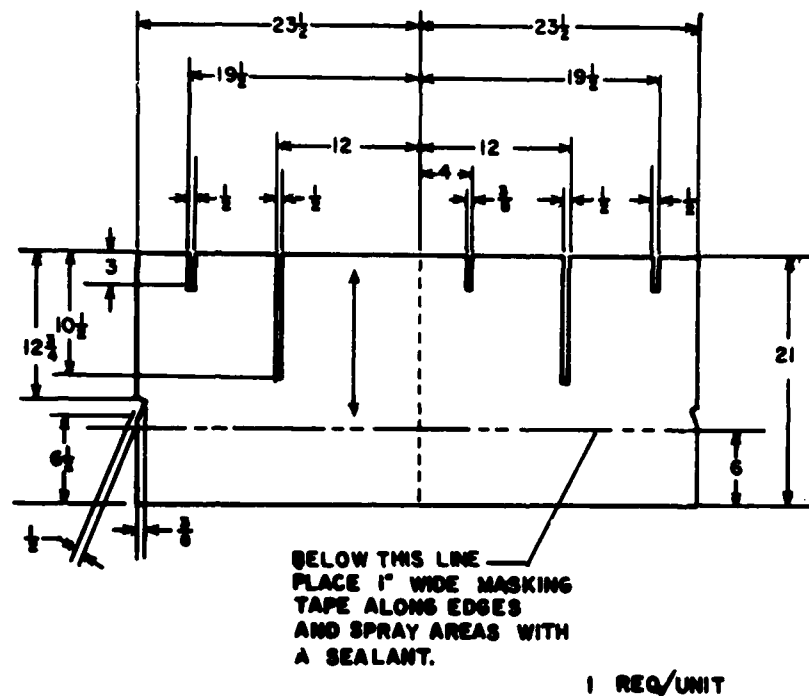


Figure 7. Vertical stool support.

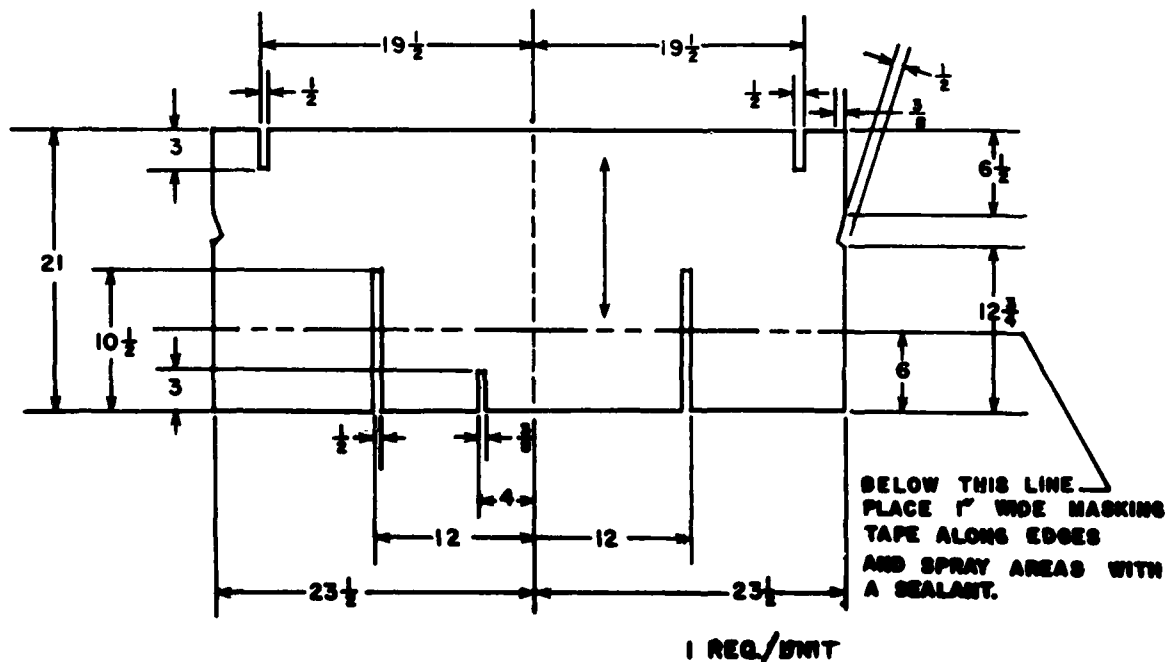


Figure 8. Vertical stool support.

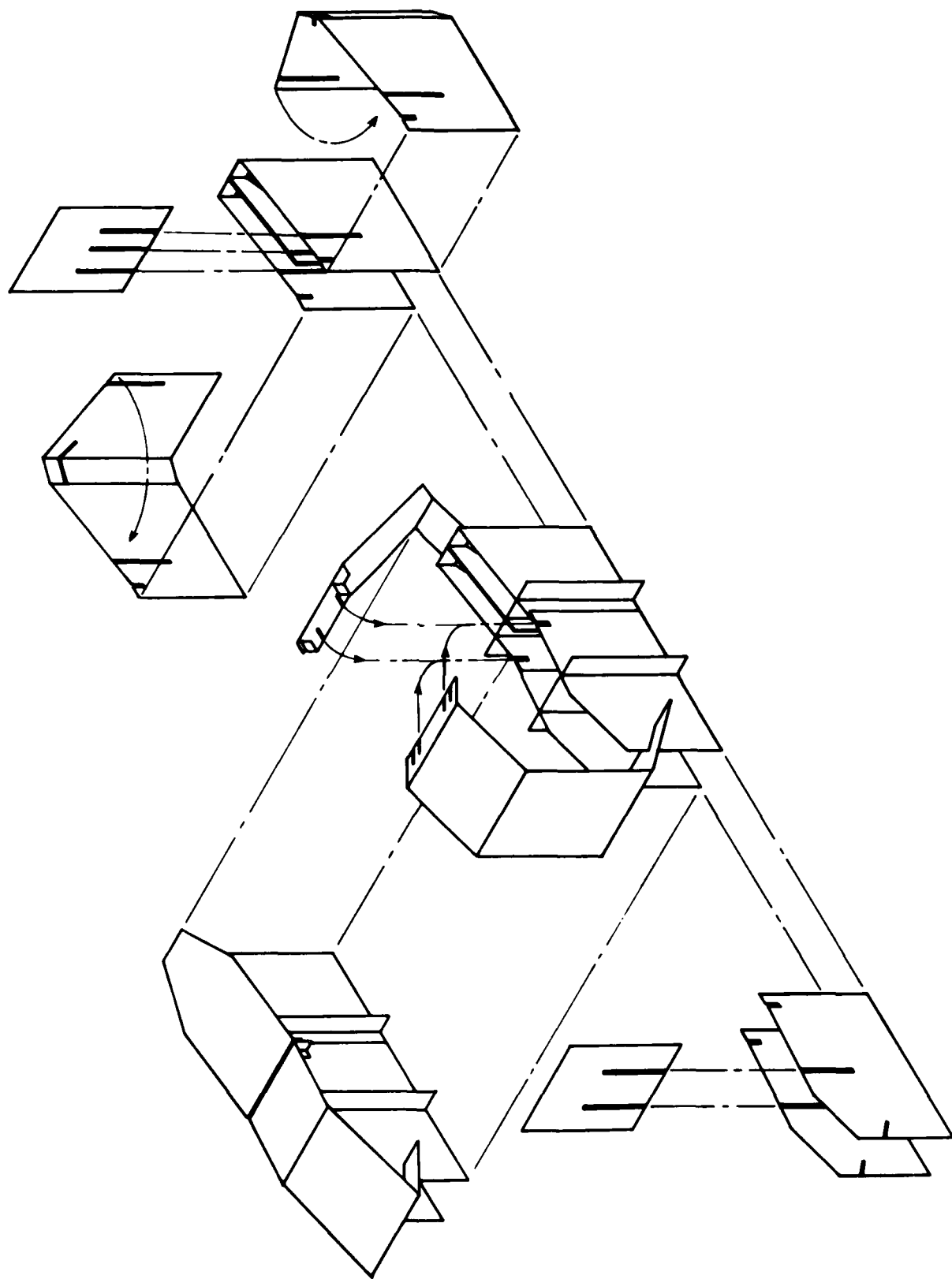


Figure 9. Chair assembly (reclining position).

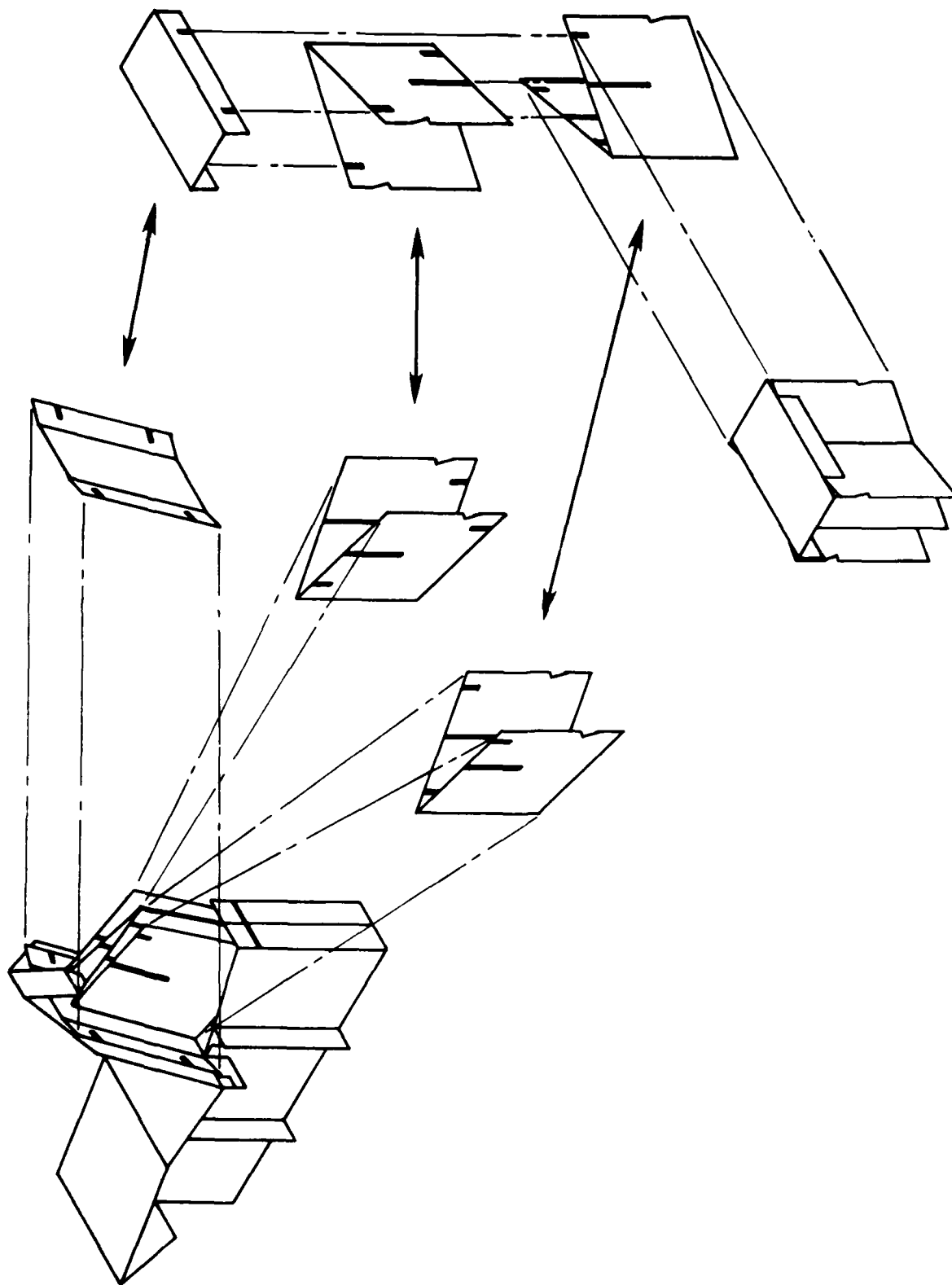


Figure 10. Stool and chair assembly (upright position).

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